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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,622	08/29/2003	Yawei Ni	04137.0003U3	1025

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EXAMINER	
SCHNIZER, RICHARD A	
ART UNIT	**PAPER NUMBER**
1635	

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/652,622	NI ET AL.	
	Examiner	Art Unit	
	Richard Schnizer, Ph. D.	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6-42,44-46,48-53,55-62 and 65-112* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6-42,44-46,48-53,55-62 and 65-112* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 8/25/06
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

An amendment was received and entered on 8/25/06.

Claims 3-5, 43, 47, 54, 63, and 64 were cancelled.

Claims 1, 2, 6-42, 44-46, 48-53, 55-62, and 65-112 remain pending and are under consideration in this Office Action.

This application is a continuation in part of 09/795,897, now US 6,777,000. However, the instant claims require a powder comprising nanoparticles or microparticles that can pass through a sieve having an opening size of about 250 microns in diameter. US 6,777,000 does not support this limitation, so the effective filing date of the instant claims is considered to be 8/29/03.

This action is NON-FINAL due to new grounds of rejection not necessitated by Applicant's amendment. The previously indicated allowability of the subject matter of original claims 5, 40, 55, 63, 65-67, and 104 is withdrawn in view of the new grounds of rejection set forth below.

Rejections not reiterated from the previous action are withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 32 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "intimately" in claims 32 and 33 is a relative term which renders the claim indefinite. The term "intimately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 17-19, 22-24, 27-29, 32-42, 44-46, 48, and 50-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Baichwal et al (US Patent 5,612,053).

Baichwal taught dry powdered compositions for controlled release of drugs, and methods of use to deliver the drugs. The dry powdered compositions comprised polysaccharides such as alginates or carrageenans, as well as a cross linking agent such as divalent metal cations, e.g. calcium chloride. See abstract, column 6, lines 16-24 and 44-59. In various embodiments, the size of the powder particles ranges from 0.1 to 10 microns, 2 to 10 microns, 63 to125 microns, and 45 to 355 microns. See column 5, lines 30-45. The composition can be prepared as a powder comprises distinct particles of drug, distinct particles of polysaccharide, as well as the cross linking agent. Alternatively, wetted particles of polysaccharide can be coated with the drug and then dried and further reduced in size if necessary. See column 8, line 4 to column 9

line 67, especially column 8 lines 51-67, and column 9, lines 16-31. The compositions are delivered to regions of the body comprising fluids such as the respiratory tract (see column 5, lines 45-52). The drug can be any of a wide variety of drugs including polypeptides and peptides, see column 10, lines 1-8 and 62-65. Pharmaceutically acceptable excipients and fillers are included in the composition, see column 7, lines 16-55.

Regarding claim 29, requiring a thickener, the polysaccharide of Baichwal is considered to be a thickener. Note that the compositions can comprise more than one type of polysaccharide (column 5, lines 57-59). Claims 37-40 and 48 are included in this rejection because they are considered to read on a method in which the solid powder of Baichwal is administered to the lung or nasal passages, and then comes into contact with lung tissue or nasal tissue as a suspension in the extracellular or respiratory fluids. See e.g. column 5, lines 45-52.

Thus Baichwal anticipates the claims

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 6, 17-19, 22-24, 27-29, 32-42, 44-46, and 48-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baichwal et al (US Patent 5,612,053) in view of Watts et al (US 6,310,089).

The teachings of Baichwal are discussed above, and anticipate claims 1, 2, 17-19, 22-24, 27-29, 32-42, 44-46, 48, and 50-52. Baichwal taught dry powdered compositions for controlled release of drugs, and methods of use to deliver the drugs. The dry powdered compositions comprised polysaccharides such as alginates or carrageenans, as well as a cross linking agent such as divalent metal cations, e.g. calcium chloride.

Although Baichwal did not limit the nature of the polysaccharide used in the invention, Baichwal did not disclose pectin as such a polysaccharide.

Watts taught powders for inhalation comprising powdered polysaccharide microspheres including alginates and pectin, among others.

It would have been obvious to one of ordinary skill in the art at the tie of the invention to use a pectin as a polysaccharide in the invention of Baichwal, because it was clear that pectins were routinely used in powdered compositions for inhalation at the time of the invention, as evidenced by Watts. MPEP 2144.06 indicates that when it is recognized in the art that elements of an invention can be substituted, one for the other, while retaining essential function, such elements are art-recognized equivalents. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). Furthermore, MPEP 2144.07 indicates that the selection of a known

material based on its suitability for its intended use supports the determination of prima facie obviousness. See also Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). In this case, it was clear to one of skill in the art that pectins and alginates could both be used in powdered microsphere form to deliver drugs by inhalation, so it would have been obvious to substitute one for the other in the method of Baichwal.

Claims 7-16, 53-62, 65-68, 71-74, 79-89, 92-106, and 108-110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baichwal et al (US Patent 5,612,053) and Watts et al (US 6,310,089) as applied to claims 1, 2, 6, 17-19, 22-24, 27-29, 32-42, 44-46, and 48-52, above, and further in view of Ni et al (US Patent 5,929,051).

The teachings of Baichwal and Watts are discussed above and can be combined to render obvious compositions comprising anionic polysaccharides having carboxylate or sulfate groups, a drug, and divalent or multivalent metal cation, wherein the composition is in the form of a powder of particles less than 250 microns in diameter.

The cited references were silent as to the characteristics of the pectin to be used.

Ni taught that a calcium-induced gel-forming aloe pectin (AP 97-1) having a molecular eight of 1.36×10^6 Da, 91% (w/w) galacturonic acid, a degree of methylation of 4.4%, 10.3% (mole/mole) rhamnose, and 0.8% (mole/mole) 3-methoxy rhamnose, was suitable for the controlled release of a physiologically active agent to an animal. See column 5, lines 55-58, Table 10 at columns 19 and 20, column 27, lines 25-67,

Figs. 5a-c, and Table 17 at columns 31 and 32. Ni also taught that the pectin was useful for delivering vaccines to mucosal surfaces of animals. See column 5, lines 55-58.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the pectin of Ni in the invention of Baichwal. One would have been motivated to do so because Ni taught that the pectin was suitable for controlled release of a physiologically active agent to an animal. MPEP 2144.07 indicates that the selection of a known material based on its suitability for its intended use supports the determination of prima facie obviousness.

Regarding claims 68, 71, and 106, requiring a thickener, the polysaccharide of Baichwal is considered to be a thickener. Note that the compositions can comprise more than one type of polysaccharide (column 5, lines 57-59), and that the polysaccharides can be present in a concentration of 10-50%, typically (column 8, lines 36 and 37). Claim 101 is included in this rejection because they are considered to read on a method in which the solid powder of Baichwal is administered to the lung or nasal passages, and then comes into contact with lung tissue or nasal tissue as a suspension in the extracellular or respiratory fluids. See e.g. column 5, lines 45-52.

Claims 1, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baichwal et al (US Patent 5,612,053) in view of Kuo et al (US Patent 6,518,239).

The teachings of Baichwal are discussed above, and anticipate claims 1, 2, 17-19, 22-24, 27-29, 32-42, 44-46, 48, and 50-52. Baichwal taught dry powdered

compositions for controlled release of drugs, and methods of use to deliver the drugs. The dry powdered compositions comprised polysaccharides such as alginates or carrageenans, as well as a cross linking agent such as divalent metal cations, e.g. calcium chloride. The drug can be any of a wide variety of drugs including polypeptides and peptides, see column 10, lines 1-8 and 62-65.

Baichwal did not explicitly teach delivery of a vaccine.

Kuo taught delivery of vaccines by inhalation of dry powders comprising a vaccine.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the composition and method of Baichwal to deliver a vaccine because it was clear to those of ordinary skill that the method of Baichwal could be used to deliver polypeptides by inhalation, and that polypeptide vaccines were routinely delivered by inhalation. Thus the invention as a whole was prima facie obvious.

Claims 75-78, 111, and 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baichwal et al (US Patent 5,612,053) and Watts et al (US 6,310,089) as applied to claims 1, 2, 6, 17-19, 22-24, 27-29, 32-42, 44-46, and 48-52, above, and further in view of Kuo et al (US Patent 6,518,239) and Ni et al (US Patent 5,929,051).

The teachings of Baichwal and Watts are discussed above and can be combined to render obvious compositions comprising anionic polysaccharides having carboxylate or sulfate groups, a drug, and divalent or multivalent metal cation, wherein the composition is in the form of a powder of particles less than 250 microns in diameter.

The cited references did not teach delivery of a vaccine.

Kuo taught delivery of vaccines by inhalation of dry powders comprising a vaccine.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the composition and method of Baichwal to deliver a vaccine because it was clear to those of ordinary skill that the method of Baichwal could be used to deliver polypeptides by inhalation, and that polypeptide vaccines were routinely delivered by inhalation. Thus the invention as a whole was prima facie obvious.

Claims 25, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baichwal et al (US Patent 5,612,053) and Watts et al (US 6,310,089) as applied to claims 1, 2, 6, 17-19, 22-24, 27-29, 32-42, 44-46, and 48-52, above, and further in view of Gordon et al (US Patent 2,629,665).

The teachings of Baichwal and Watts are discussed above and can be combined to render obvious compositions comprising a pectin, a drug, and divalent or multivalent metal cation, wherein the composition is in the form of a powder of particles less than 250 microns in diameter.

The cited references did not teach the use of calcium phosphate.

Gordon taught that almost any calcium ion, including calcium chloride, mono-calcium phosphate, di-calcium phosphate, etc could be used to cause pectin to form a gel. See column 4, lines 6-15.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use calcium phosphate in the invention of Baichwal, as modified by Ni. MPEP 2144.06 indicates that when it is recognized in the art that elements of an invention can be substituted, one for the other, while retaining essential function, such elements are art-recognized equivalents. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). In this case, it was well known in the art calcium phosphate could be substituted for the calcium chloride of Baichwal or Ni. Furthermore, MPEP 2144.07 indicates that the selection of a known material based on its suitability for its intended use supports the determination of prima facie obviousness.

Claims 90 and 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baichwal et al (US Patent 5,612,053) and Watts et al (US 6,310,089) as applied to claims 1, 2, 6, 17-19, 22-24, 27-29, 32-42, 44-46, and 48-52, above, and further in view of Gordon et al (US Patent 2,629,665) and Ni et al (US Patent 5,929,051).

The teachings of Baichwal, Watts, and Gordon are summarized directly above, and render obvious the use of calcium phosphate a s cationic metal in conjunction with powdered compositions comprising a pectin, a drug, and divalent or multivalent metal cation, wherein the composition is in the form of a powder of particles less than 250 microns in diameter.

The cited references were silent as to the particular characteristics of the pectin.

Ni taught that a calcium-induced gel-forming aloe pectin (AP 97-1) having a molecular eight of 1.36 X 10^6 Da, 91% (w/w) galacturonic acid, a degree of methylation of 4.4%, 10.3% (mole/mole) rhamnose, and 0.8% (mole/mole) 3-methoxy rhamnose, was suitable for the controlled release of a physiologically active agent to an animal. See column 5, lines 55-58, Table 10 at columns 19 and 20, column 27, lines 25-67, Figs. 5a-c, and Table 17 at columns 31 and 32. Ni also taught that the pectin was useful for delivering vaccines to mucosal surfaces of animals. See column 5, lines 55-58.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the pectin of Ni in the invention of Baichwal. One would have been motivated to do so because Ni taught that the pectin was suitable for controlled release of a physiologically active agent to an animal. MPEP 2144.07 indicates that the selection of a known material based on its suitability for its intended use supports the determination of prima facie obviousness.

Claims 1, 29, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baichwal et al (US Patent 5,612,053) in view of Mizushima et al (US Patent 5,942,242).

The teachings of Baichwal are discussed above, and anticipate claims 1, 2, 17-19, 22-24, 27-29, 32-42, 44-46, 48, and 50-52. Baichwal taught dry powdered compositions for controlled release of drugs, and methods of use to deliver the drugs. The dry powdered compositions comprised polysaccharides such as alginates or

carrageenans, as well as a cross linking agent such as divalent metal cations, e.g. calcium chloride.

Baichwal did not teach the thickeners recited in instant claims 30 and 31.

Mizushima taught that hydroxypropylmethylcelluloses, carboxymethylcelluloses, carboxymethylchitin, polyvinylpyrrolidone, polyvinylpyrrolidone, hyaluronic acid, gelatin, and dextran were useful additives to inhalable powders because they increased adherence to the nasal mucosa. See column 5, lines 13-34.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use any of the agents taught by Mizushima in the composition of Baichwal in order to improve the adherence of the composition upon nasal administration.

Claims 69, 70, and 107 are over Baichwal et al (US Patent 5,612,053) and Watts et al (US 6,310,089) as applied to claims 1, 2, 6, 17-19, 22-24, 27-29, 32-42, 44-46, and 48-52, above, and further in view of Mizushima et al (US Patent 5,942,242) and Ni et al (US Patent 5,929,051).

The teachings of Baichwal, Watts and Mizushima are summarized directly above, and can be combined to render obvious compositions for controlled release of drugs, and methods of use to deliver the drugs. The dry powdered compositions comprised polysaccharides such as pectins, alginates or carrageenans, as well as a cross linking agent such as divalent metal cations, e.g. calcium chloride.

The cited references were silent as to the particular characteristics of the pectin.

Ni taught that a calcium-induced gel-forming aloe pectin (AP 97-1) having a molecular eight of 1.36 X 10^6 Da, 91% (w/w) galacturonic acid, a degree of methylation of 4.4%, 10.3% (mole/mole) rhamnose, and 0.8% (mole/mole) 3-methoxy rhamnose, was suitable for the controlled release of a physiologically active agent to an animal. See column 5, lines 55-58, Table 10 at columns 19 and 20, column 27, lines 25-67, Figs. 5a-c, and Table 17 at columns 31 and 32. Ni also taught that the pectin was useful for delivering vaccines to mucosal surfaces of animals. See column 5, lines 55-58.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the pectin of Ni in the invention of Baichwal. One would have been motivated to do so because Ni taught that the pectin was suitable for controlled release of a physiologically active agent to an animal. MPEP 2144.07 indicates that the selection of a known material based on its suitability for its intended use supports the determination of prima facie obviousness.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner(s) should be directed to Richard Schnizer, whose telephone number is 571-272-0762. The examiner can normally be reached Monday through Friday between the hours of 6:00 AM and 3:30. The examiner is off on alternate Fridays, but is sometimes in the office anyway.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Peter Paras, can be reached at (571) 272-4517. The official central fax number is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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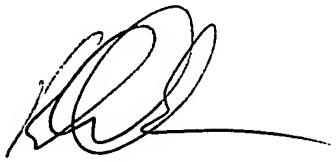

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Art Unit 1635